REPORT ON GEOPHYSICAL SURVEYS (VLF & MAG) ON SEWELL LAKE GOLD PROPERTY SEWELL AND REEVES TOWNSHIPS

FOR

GOLDROCK RESOURCES INC.

BY

GREG HODGES

Dual

2 5919.

TABLE

INTRODUCTION

During October, 1986 a program of linecutting and magnetics and VLF-EM surveying were conducted on the 19 claim Sewell Lake Gold Property of Goldrock Resources Inc.

The property, located in Sewell and Reeves townships of the Porcupine Mining Division, Ontario, was surveyed by Robert S. Middleton Exploration Services Inc. of 136 Cedar St. S., Timmins, Ontario.

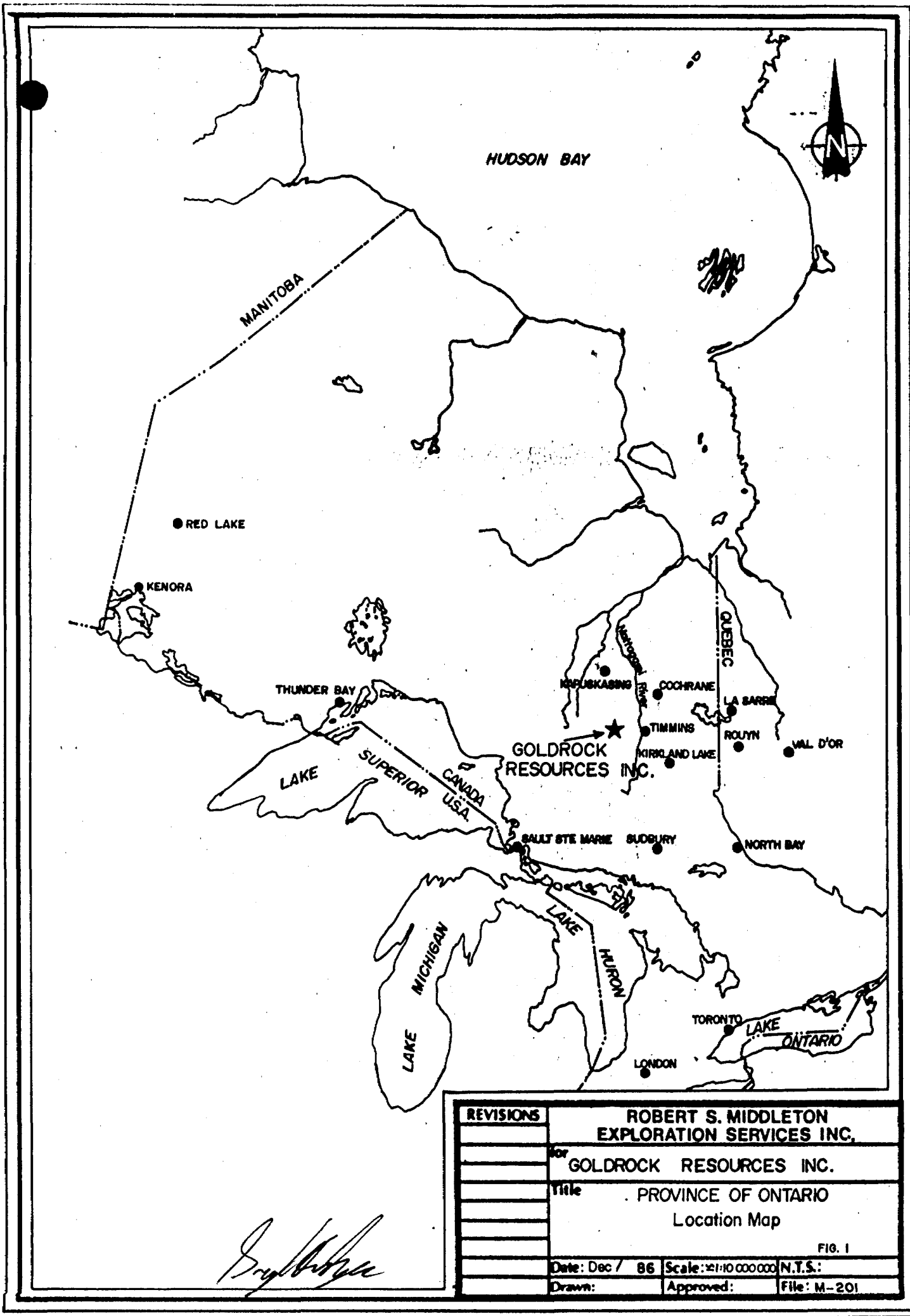
Goldrock Resources Inc. is located at P.O. Box 1637, Timmins, Ontario.

LOCATION AND ACCESS

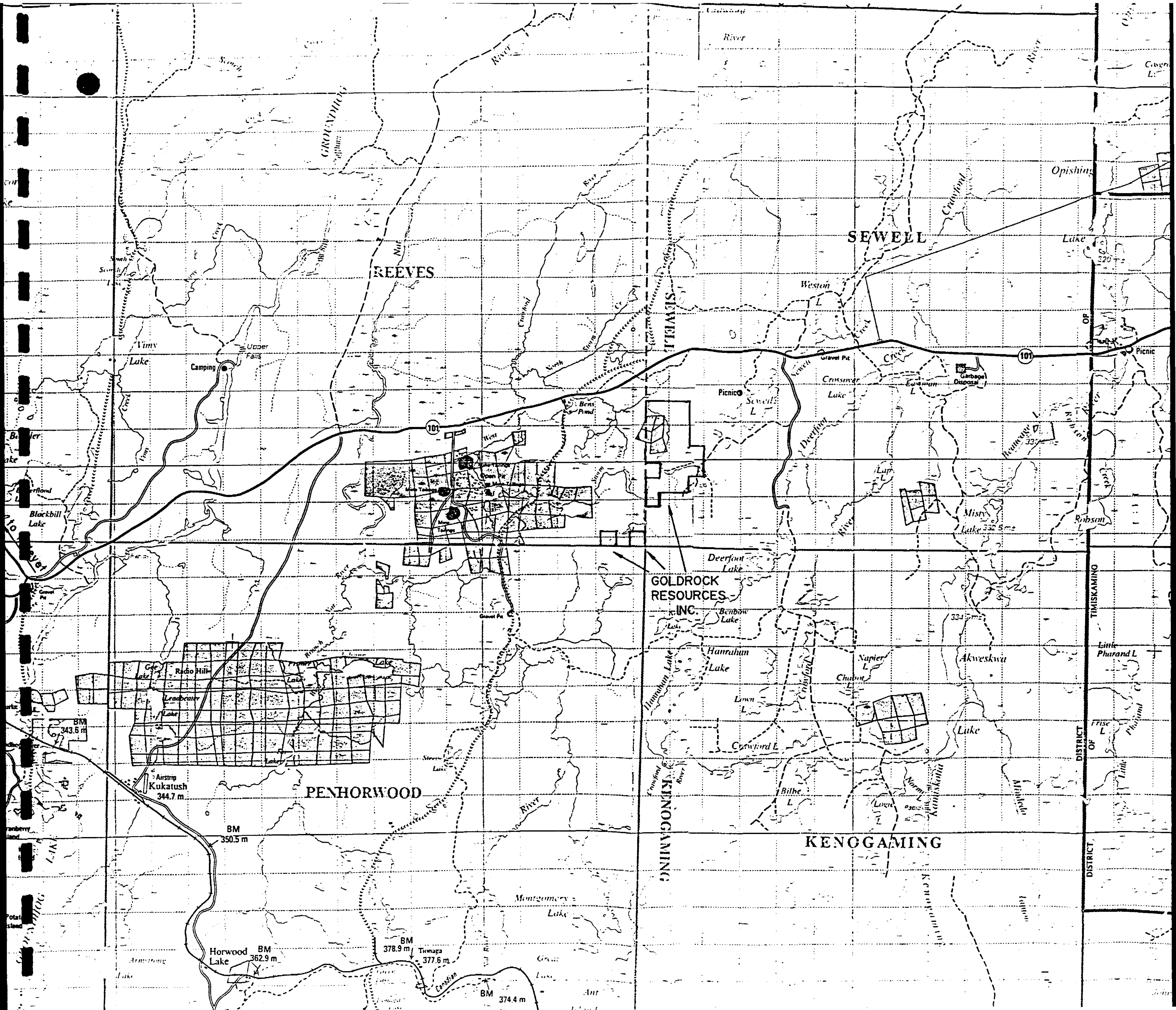
The property is located in Sewell and Reeves (2 claims) townships in the District of Sudbury. Access directly on to the grid was by truck over the Kenogaming Lumber road (loose surface) from Highway 101 between Timmins and Foleyet. (Figures 1 and 2)

CLAIM STATUS

There are 20 unpatented claims in the group, 18 of which are in Sewell Township near the western edge, and two of which are on the south border of Reeves Township. (Figure 3)



REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.		
	for GOLDROCK RESOURCES INC.		
	Title . PROVINCE OF ONTARIO Location Map		
			FIG. 1
	Date: Dec / 86	Scale: 1:10 000 000	N.T.S.:
	Drawn:	Approved:	File: M-201


REEVES
SEWELL
SEWELL
KENOGAMING
KENOGAMING
PENHORWOOD
GOLDROCK
RESOURCES
INC.
TIMISKAMINO
DISTRICT
OF
DISTRICT
GROUNDHOG
Vimy
Lake
Camping
Upper
Falls
Blackbill
Lake
101
Bens
Pond
Picnic
Sewell
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Weston
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Crossover
Lake
Gravel Pit
Garbage
Disposal
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Deerfoot
Lake
Misty
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Robson
Benbow
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Hanrahan
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Napier
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Chabot
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Akweskwa
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Crawford L
Bilbe
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Little
Pharand L
Frise
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Radio Hill
Leadbeater
Lake
BM
343.6 m
Airstrip
Kukatush
344.7 m
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350.5 m
Montgomery
Lake
Horwood
Lake
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362.9 m
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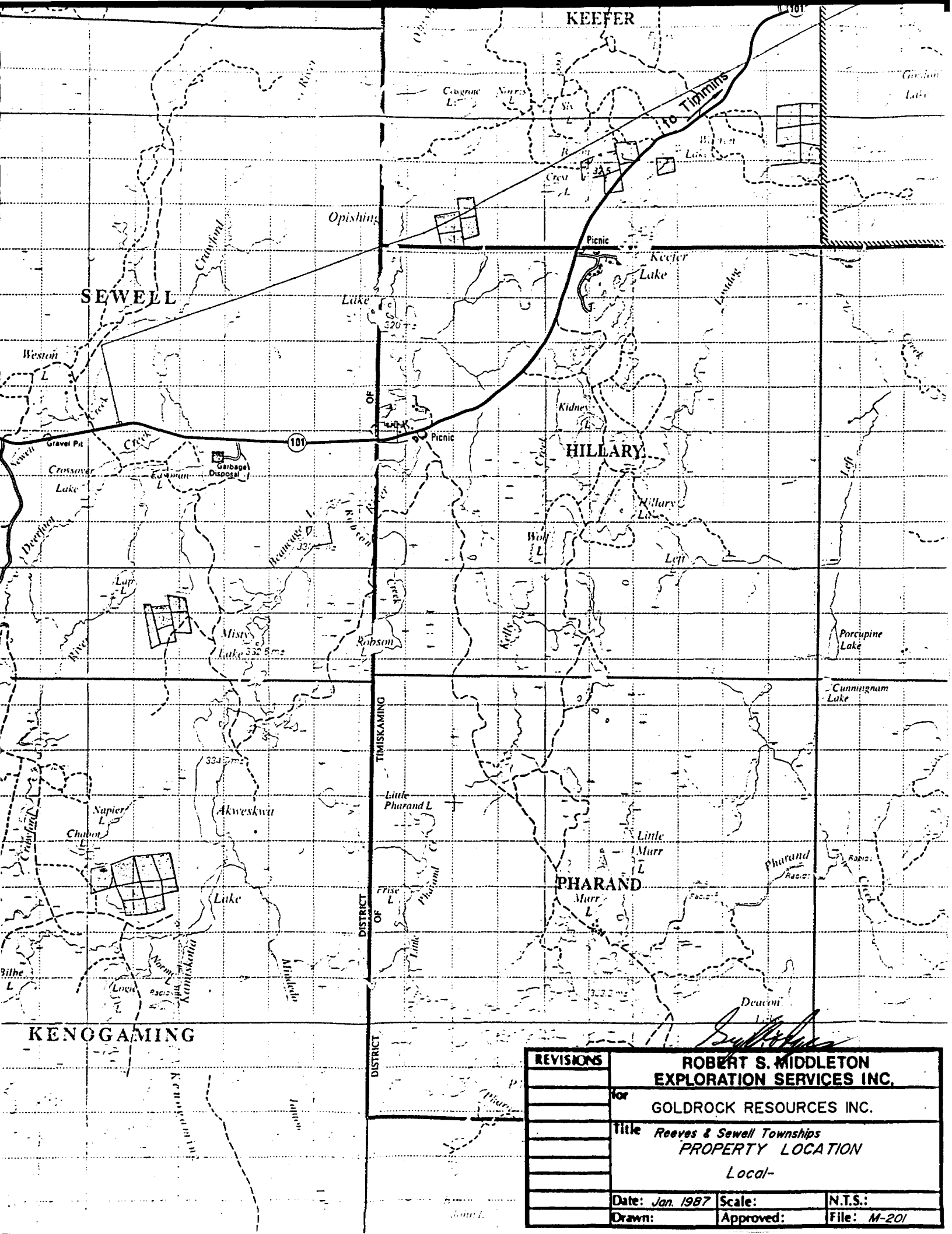
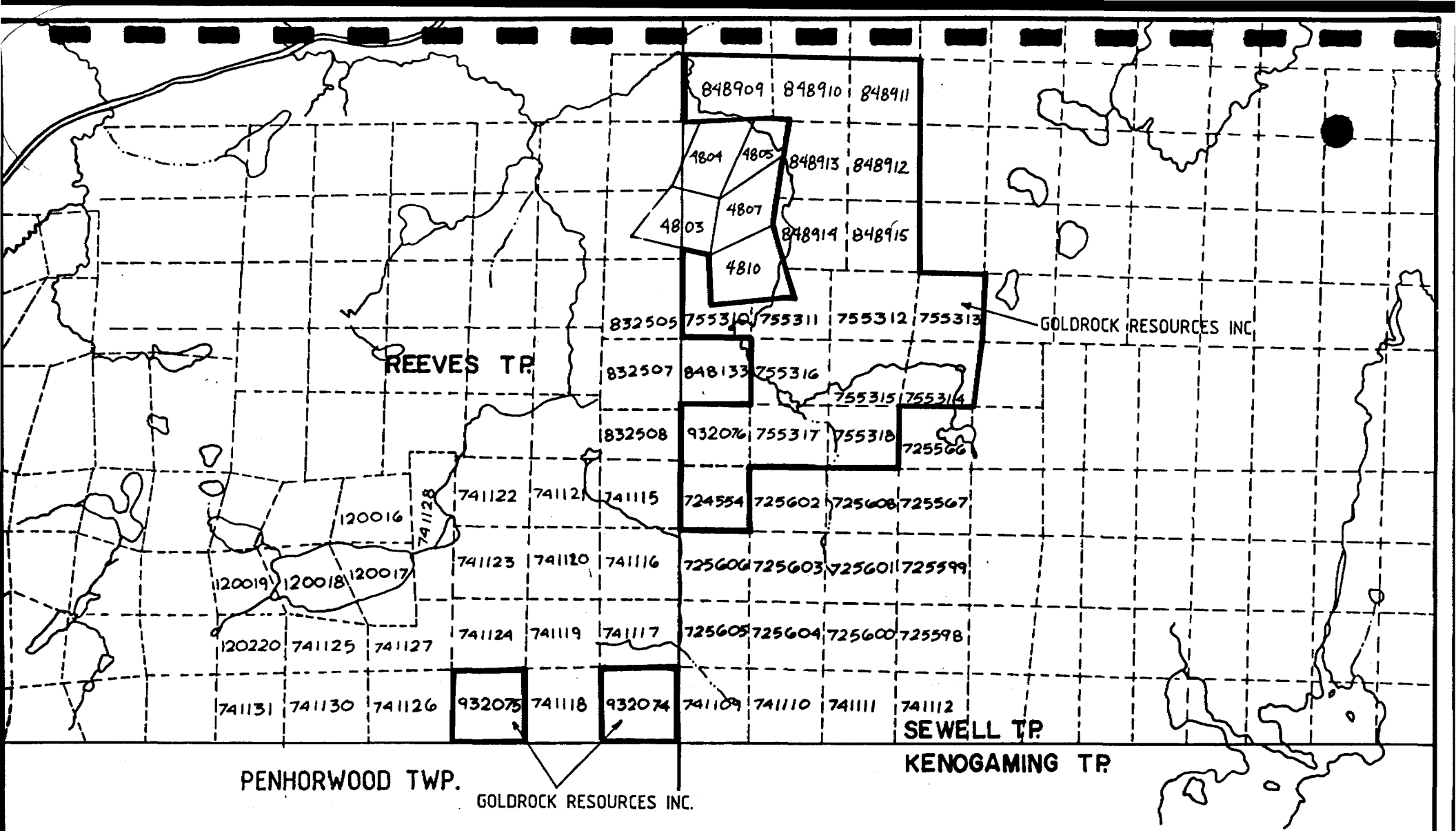
River
Creek



REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.		
	for GOLDROCK RESOURCES INC.		
	Title *Reeves & Sewell Townships* PROPERTY LOCATION Local-		
	Date: *Jan. 1987*	Scale:	N.T.S.:
	Drawn:	Approved:	File: *M-201*



REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.
	for GOLDROCK RESOURCES INC.
	Title: CLAIM INDEX MAP
	Fig. 2
	Date: Dec/ 1986 | Scale: 1"=1/2 mile | N.T.S.:
	Drawn: P.G. - C.G. | Approved: | File: M-201

All the claims are listed below:

CLAIM NUMBERS	DATE RECORDED	# OF CLAIMS	WORK FILED	DUE DATE
755310-18 incl.	May 21, 1985	9	0	12/12/86 EXT
848909-15 incl.	April 30, 1985	7	0	12/12/86 EXT
932074,932076	June 5, 1986	2	0	05/06/87
932075	June 24, 1986	1	0	24/06/87
724554	October 14, 1983	1	60	14/10/86

The above 20 claims are in the Porcupine Mining District and are registered in the name of Goldrock Resources Inc.

REGIONAL GEOLOGY

The following is a quote from Preliminary Exploration Report on the Sewell Lake Gold Property for Goldrock Resources Inc. by K.H. Darke, P.Eng., of July 24, 1986.

> The geology of the Sewell Lake Region was first shown in detail on two Preliminary Geological Maps issued by the Ontario Department of Mines: Reeves Township, P.418 (1967); and Sewell Township, P.464 (1968). The regional geology is shown on ODM Compilation Series Map 2205, Timmins-Kirkland Lake (1973) and adjoining Map 2221, Chapleau-Foleyet (1976); and is also covered by ODM-GSC Aeromag Map Nos. 2263G, 2264G & 2299G (1963-64). Two substantial reports on the regional & economic geology of the area were subsequently issued with accompanying maps by the Ontario Division of Mines: ODM Geological Report

97, Geology of the Kukatush-Sewell Lake Area (1972); and ODM Geoscience Report 157, Geology of the Chapleau Area (1977). Individual mineral occurrences in the region are also described in Ontario Geological Survey publication "Gold Deposits of Ontario, Part 2 (1979)".

(a) Regional Geology

All the consolidated rocks in the Sewell Lake Region are of Precambrian age --- they constitute part of the "Abitibi Greenstone Belt" of the Superior Province of the Precambrian Shield. Much of the bedrock in the region is masked by a cover of Pleistocene-age glacial-derived overburden. As indicated on Geological Compilation Map Nos. 2205 and 2221, a complex assemblage of Mafic to Felsic Metavolcanics with associated Metasediments (Greenstone Belt) extends southwest from the Timmins Area through the Sewell Lake Region and on into the Swayze Gold Area. This highly folded volcanic-sedimentary sequence has been intruded locally by quartz-feldspar porphyries, gabbro, peridotite & diorite. This aforementioned belt is bounded by large masses of syntectonic

trondhjemitic gneiss and younger plutons of massive granodiorite. All these rocks are Early Precambrian (Archean) age. Subsequently the whole area was intruded by diabase dike swarms of Early to Middle Precambrian age. Regional considerations indicate that the stratigraphy in the Sewell Lake Region is equivalent to the Tisdale Group located to the northeast in the Timmins Area.

The regional geology can be generalized as consisting of a group of contemporaneous volcanic piles and related sediments all of which have been intensely folded, faulted, eroded, and intruded by rocks of mafic to felsic composition. The volcanism is cyclic in nature and consists of an initial ultramafic-mafic phase followed by more intermediate & felsic rock types with intercalated clastic sediments & exhalites, and ends with felsic pyroclastic-volcaniclastic material at the top. That is, major volcanic cycles as repeated throughout the Abitibi Greenstone Belt begin with ultramafic & mafic submarine activity (basaltic flows) at their base and end with more siliceous volcanism (rhyolitic pyroclastics) and

penecontemporaneous sedimentation. These major volcanic piles are generally flanked by a contemporaneous assemblage of sediments-volcaniclastics deposited in adjacent restricted basins.

(b) Economic Geology

There has been substantial production of asbestos & talc from Reeves Township, and there are showings of copper, zinc, nickel & iron in the general region; however, because of the rock types and mineralization present on and/or adjacent to the Sewell Lake Property it is being considered primarily for its gold potential.

Although gold mineralization was first found in the area over 70 years ago, the only production to date (1973-75) has come from the Joburke Gold Mine located in Keith Township. The following description of the host rocks and mineralization present at the Joburke Mine are taken from OGS Mineral Deposits Circular 18, Part 2:...

> The ore is an intricate network of quartz stringers and veins in variously silicified, albitized, and carbonatized andesite and dacite. Vein material is largely quartz, albite, carbonate, and pyrite, with minor chalcopyrite and occasional visible gold. The presence of chalcopyrite is an indicator of gold values, but the better values are usually found where marked

concentrations of pyrite are also present.

PROPERTY GEOLOGY

The geology of the Sewell Lake claim group was being mapped at the time of this survey. This will be published in a report by Scott Frostad; Geological Report on the Sewell Lake Gold Property .

PREVIOUS WORK

The following is quoted from S. Frostads' Geologic Report (Preliminary).

1916: Gold was discovered in a quartz vein on the south-western boundary of Sewell Twp. patented claims S4803-S4805, now known as the Lamport-Lumbers Occurance. Associated with the quartz are pyrite, pyrrhotite, chalcopyrite, tourmaline and mariposite. A sample taken across the vein zone by T.L. Tanton reportedly assayed 0.02 oz. Au/ton.

Circa 1924: The Lamport-Lumbers vein was cleared and stripped for a distance of 1/2 mile, and 3 pits were sank to a depth of about 8 feet.

1935: A rusty quartz float containing visible gold was found in the extreme south-east corner of Reeves Twp. on current Goldrock Claim No. 932074. A grab sample of quartz from the float trench assayed 0.13 oz. Au/ton. Follow-up exploration by Kalbrook Mining Company in 1946

included trenching and 13 diamond drill holes but failed to disclose the sources of the gold-bearing boulder.

1946: The discovery of the Joburke Gold Mine located in Keith Township approximately 12 miles south-west of Goldrock's Sewell Lake Property prompted re-staking of the current subject area a number of times by others but little, if any, work was undertaken due to the low price of gold.

1957: The Canadian Johns-Manville Company Limited examined eight different claim groups in the Sewell Township, one of which covered the present Goldrock Sewell claim group, with ground magnetic and horizontal loop surveys. A number of pyritic quartz veins were located and low gold values were reported from some of these but no further work was done.

1967: A discovery of antimony (stibnite) mineralization in the south-western part of Sewell Township, Goldrock Claim No. 901338, was reported by V.G. Milne, Ontario Department of Mines (ODM Preliminary Geological Map No. P.464).

1971: Card Lake Copper Mines held a 17-claim property in Reeves and Sewell Townships which was staked to investigate the antimony showing. Geophysical programmes carried out by Card Lake included magnetic and electromagnetic (Vertical Loop) surveys. Twenty-nine

diamond drill holes were drilled between 1971 and 1974 with nine shallow holes and two longer holes drilled in the antimony showing area. The other drill holes tested numerous mineralized quartz veins and graphitic occurences in the eastern portion of the claim group.

1979-80: Texasgulf Canada Limited held a 13-claim property located in Reeves and Sewell Townships encompassing the aforementioned antimony showing previously held by Card Lake. Exploration by Texasgulf consisted of electromagnetic (Horizontal Loop and VLF), magnetic and geological surveys over their entire property.

1982: Gold Fields Canadian Mining Ltd. conducted ground geophysics consisting of VLF and magnetics over a property that overlaps the north-east section of Goldrock's Sewell claim group. Although soil geochemistry and detailed IP surveys were recommended, no further work was done.

1984: Comstate Resources Ltd. completed a preliminary lithogeochemical and partial trace element survey over parts of 4 claims including the aforementioned antimony showing and current Goldrock Claim No. 932076.

1985-86: The current 21-claim Sewell Lake Property was staked and subsequently acquired by Goldrock Resources Inc. Ground geophysics consisting of magnetics and VLF surveys has been conducted over the entire property.

SURVEY PROCEDURES

MAGNETICS

Theory

The magnetic method is based on measuring alteration in the shape and magnitude of the earth's naturally ocurring magnetic field caused by changes in the magnetization of the rocks in the earth.

These changes in magnetization are due mainly to the presence of the magnetic minerals, of which the most common is magnetite, and to a lesser extent ilmenite, pyrrhotite, and some less common minerals.

Magnetic anomalies in the earth's field are caused by changes in two types of magnetization: induced and remanent (permanent). Induced magnetization is caused by the magnetic field being altered and enhanced by increases in the magnetic susceptibility of the rocks, which is a function of the concentration of the magnetic minerals.

Remanent magnetism is independant of the earth's magnetic field, and is the permanent magnetization of the magnetic particles (magnetite, etc.) in the rock. This is created when these particles orient themselves parallel to the ambient field when cooling. This magnetization may not be in the same direction as the present earth's field, due to changes in the orientation of the rock or the field.

The most common method of measuring the total magnetic field in ground exploration is with a proton precession magnetometer. This device measures the effect of the magnetic field on the magnetic dipole of hydrogen protons. This dipole is caused by the "spin" of the proton, and in a magnetometer these dipoles in a sample of hydrogen-rich fluid are oriented parallel to a magnetic field applied by an electric coil surrounding the sample. After this magnetic field is removed, the dipoles begin to precess (wobble) around their orientation under the influence of the ambient earth's magnetic field. The frequency of this precession is proportional to the earth's magnetic field intensity.

Field Method

The magnetics data were collected with a proton precession magnetometer, which measures the absolute value of the total magnetic field of the earth to an accuracy of $\pm$ 1 n Tesla. The magnetometer is carried down the survey line by a single operator, with the sensor mounted on a short pole to remove it from the surface geologic noise. Readings are normally taken at 25 m intervals, and at 12.5 m intervals where the operator observes a high gradient (anomaly).

The readings are corrected for changes in the earth's total field (diurnal drift) by measuring and recording the drift with a stationary (base station) magnetometer. This recorded drift is

then applied to the data as a correction.

VLF

Theory

The VLF (Very Low Frequency) electromagnetic system is a frequency domain system which uses military transmitters designed to communicate with submarines as a source. The system measures the response of conductors to these time varying electromagnetic fields.

The transmitted, or primary EM field is a sinusoidally varying field in the range of 15.0 to 30.0 KHz, dependant on the source station used. This field induces an electromotive force (emf), or voltage in any conductor though which the field passes. This is defined by

$$\oint E.dl = \frac{\partial \Phi}{\partial t}$$ (The Faraday Induction Principle)

where E is the electric field strength in volts/metre (and so $\oint E.dl$ is the emf around a closed loop) and Φ is the magnetic flux through the conductor loop. This emf causes a "secondary" current to flow in the conductor in turn creating a secondary electromagnetic field, which is measured by the receiver.

The VLF transmitting antennae are vertically oriented, thus the primary field is horizontal perpendicular to the transmission direction.

The secondary field from a conductor is different in amplitude from the primary, and shifted in phase. Because both

fields are sinusoidal, the resultant electromagnetic vector traces an ellipse. The receiver measures two of the following properties of the ellipse: orientation of the minor axis (tilt), ratio of minor to major axis (ellipticity), or amplitude of the minor axis (field strength).

The receiver has two receiving coils built in, one coil with a normally vertical axis and the other horizontal. The signal from the vertical axis coil is first minimized by tilting the instrument. The remaining signal in this coil is finally balanced out by a measured percentage of a signal from the horizontal coil, after being shifted in phase by 90°.

Assuming the secondary signal is small compared to the primary field, the mechanical tilt angle is an accurate measure of the vertical real (in phase) component of the secondary, and the 90° compensation signal from the horizontal coil is a measure of the quadrature vertical signal.

Field Method

A transmitter station is selected which gives a strong field as close as possible to right angles to the suspected strike of the geology.

The reference (horizontal) coil is oriented parallel to the primary field, and then the instrument is tilted until the minimum is heard. The quadrature component (compensator) is then adjusted until a further minimum is reached, and the tilt angle

and compensation field recorded as in-phase and quadrature field in percent.

Readings are normally taken at 25m intervals. Shorter spaced readings may be taken unless the data is to be Fraser Filtered for plotting.

Notes on the Fraser Filter

This is a system for presenting VLF tilt angle data devised by D.C. Fraser (Contouring of VLF-EM Data , Geophysics, Vol.34, No.6, December 1969). It is basically a combination of a low pass (noise removal) filter and a gradient filter which smooths the data and converts high gradients (cross-overs) to peaks. These results are then plotted on a map and contoured to show high values in regions of high conductivity.

The filter operator is [M3 + M4 - M1 - M2] where M1,M2,M3,M4 are four consecutive data points.

PERSONNEL AND EQUIPMENT

Because the property was close to the Middleton Exploration head office in Timmins, the surveys were completed in parts by six different operators. The majority of the work was completed by Douglas J. Meikle. All of the operators were accomodated in Timmins. Transportation was by truck, provided by Middleton Exploration.

The magnetics survey was completed with an EDA OMNI IV proton precession magnetometer. The base station magnetometer

was an EDA PPM 400.

The VLF instruments used were Geonics EM-16's. The station used was Cutler Maine, 17.8 KHz.

Specifications for these instruments are listed in Appendix A.

SURVEY STATISTICS

A total of 31.07 miles of line were cut and chained. A total of 14 production days were required to complete the geophysical surveying. All the data was collected at 25m station intervals, with 100m line intervals.

The magnetics data is presented as maps of contoured data values. The VLF-EM is presented as plan maps of line profiles as well as maps of contoured, Fraser Filtered data.

INTERPRETATION

The magnetics data indicate that the geologic structure is complex in this grid. There are numerous cross-cutting and conflicting structures apparent. The VLF-EM data also shows a lot of discordant featuress, seldom matching the magnetic features.

The most noticeable anomalies on the magnetics are the north-north west striking diabase dikes, two in the south west corner (claim 901338) and two crossing the easternmost part of the grid north east of Raney Lake. These latter two are not as obvious as the western two, because the eastern survey lines are

north-south only. One of these is at 25N on L12E and at 21N on L13E, the other on 14E at 27N and TL20N at 1450E.

There are distinct lithologic regions evident in the magnetics. One contact lies roughly along a line between TL16N at 925E and 550E on L26N. The same contact, or a similar one, crosses the northern claim 848910 at about L5E or L6E. The two units apparent are the one to the west which has a background level of about 650 to 750 nT. The other unit is characterized by strong changes in the field, with no large areas of constant background.

These different units may not be actual different rock types, but the same rock type with different amounts of magnetic mineralization.

There are several other structures which can be inferred from the geophysics with reference to the geology. Three fault/shear zones are apparent, one striking east north east along the north edge of the lake in the centre of the grid, another parallel to this from the west end of L25N to about 29N or L12E, and a third striking north east through about 35N on L6E. Only the northernmost shows a definite horizontal offset, truncating several magnetic features.

There appears to be a fold evident in the data on lines 6E to 8E between 28N and 36N. This appears as a curved structure and the unusual anomaly immediately south of it is incomplete,

making it difficult to determine what these are.

The VLF-EM data shows very little resemblance to the magnetics data in location and shape of anomalous features. The strongest feature, on lines 4E and 6E between 20N and 24N, is in an area of exceptionally quiet magnetics, with no outcrop. This suggests that the VLF anomaly is due to increased overburden thickness and conductivity.

There is an anomaly between 25N and 26N on lines 0E, 1E and 2E that is coincident with the interpreted shear zone, but the rest of the shear is not conductive, nor are the other faults/shears so this is inconclusive.

CONCLUSIONS AND RECOMMENDATIONS

The geophysical surveys completed did not detect any exceptionally interesting anomalies, but were a valuable aid in constructing the geologic maps of the property. It would be premature to attempt to define diamond drill targets from the geophysical results alone.

Further geophysical surveying is recommended to investigate this property. Induced Polarization surveying, valuable in detecting disseminated metallic mineralization, should be employed to search for zones of alteration, particularly near the fault/shear zones. The main grid would require approximately 15km of surveying on 200m line intervals, with the remaining time allowed for in K.H. Darkes budget to be used for detailed

surveying where indicated by the initial work.

The budget, Phase 2B from Darkes report would be:

i	IP Survey 20 days @ $1,400./day	$28,000.00
ii	Mobilization and Servicing Camp	2,400.00
iii	Geophysical Report	3,000.00
	Sub Total	$33,400.00
	Contingencies @ 10%	3,300.00
	Total	$36,700.00

The results of the IP surveying would be used with the geology to determine further work targets.

Respectfully Submitted

Greg Hodges

Geophysicist

CERTIFICATION

I, D. Greg Hodges, of 136 Cedar Street South, in the city of Timmins, Province of Ontario, certify as follows concerning my report on the Sewell Lake Gold property in Sewell and Reeves Townships, Province of Ontario and dated January 7, 1987:

1. I am a member in good standing of the Society of Exploration Geophysicists

2. I am a graduate of Queen's University at Kingston, Ontario, with a B.Sc. (Hons.) Geological Sciences with Physics, obtained in 1980.

3. I have been practising in Canada, and occasionally in the United States, Europe, and Australia for the past six years.

4. I have no direct interest in the properties, leases, or securities of Goldrock Resources Inc., nor do I expect to receive any.

5. The attached report is a product of:

   a) Examination of data included in the report which was collected on the property concerned.

Dated this January 7, 1987
Timmins, Ontario

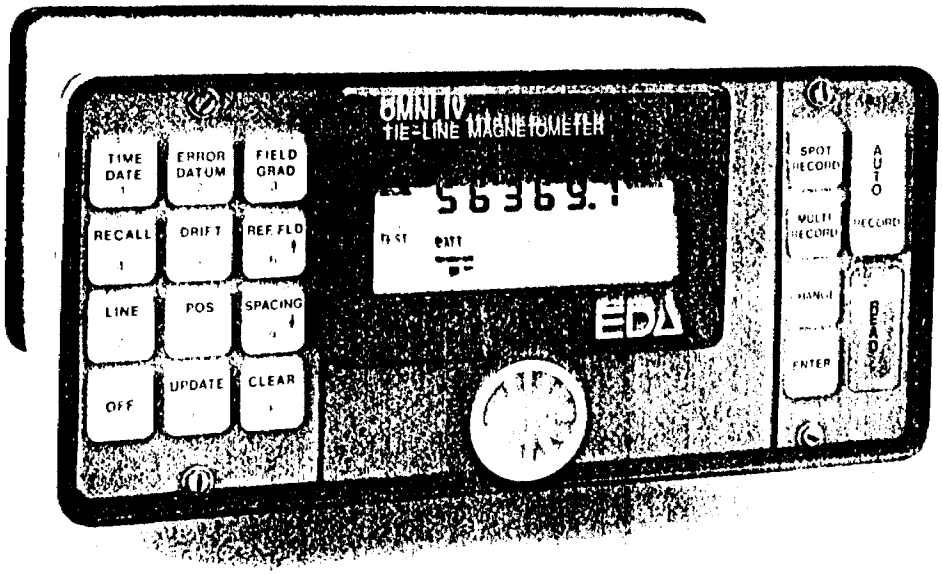
_____

D. Greg Hodges, Geophysicist

A P P E N D I X A

OMNI IV "Tie-Line" Magnetometer

EDA



Four Magnetometers in One

Self Correcting for Diurnal Variations

Reduced Instrumentation Requirements

25% Weight Reduction

User Friendly Keypad Operation

Universal Computer Interface

Comprehensive Software Packages

EDA

Specifications

Dynamic Range	18,000 to 110,000 gammas. Roll-over display feature suppresses first significant digit upon exceeding 100,000 gammas.
Tuning Method	Tuning value is calculated accurately utilizing a specially developed tuning algorithm
Automatic Fine Tuning	± 15% relative to ambient field strength of last stored value
Display Resolution	0.1 gamma
Processing Sensitivity	± 0.02 gamma
Statistical Error Resolution	0.01 gamma
Absolute Accuracy	± 1 gamma at 50,000 gammas at 23°C ± 2 gamma over total temperature range
Standard Memory Capacity	
Total Field or Gradient	1,200 data blocks or sets of readings
Tie-Line Points	100 data blocks or sets of readings
Base Station	5,000 data blocks or sets of readings
Display	Custom-designed, ruggedized liquid crystal display with an operating temperature range from −40°C to +55°C. The display contains six numeric digits, decimal point, battery status monitor, signal decay rate and signal amplitude monitor and function descriptors.
RS 232 Serial I/O Interface	2400 baud, 8 data bits, 2 stop bits, no parity
Gradient Tolerance	6,000 gammas per meter (field proven)
Test Mode	A. Diagnostic testing (data and programmable memory) B. Self Test (hardware)
Sensor	Optimized miniature design. Magnetic cleanliness is consistent with the specified absolute accuracy.
Gradient Sensors	0.5 meter sensor separation (standard), normalized to gammas/meter. Optional 1.0 meter sensor separation available. Horizontal sensors optional.
Sensor Cable	Remains flexible in temperature range specified, includes strain-relief connector
Cycling Time (Base Station Mode)	Programmable from 5 seconds up to 60 minutes in 1 second increments
Operating Environmental Range	−40°C to +55°C; 0–100% relative humidity; weatherproof
Power Supply	Non-magnetic rechargeable sealed lead-acid battery cartridge or belt; rechargeable NiCad or Disposable battery cartridge or belt; or 12V DC power source option for base station operation.
Battery Cartridge/Belt Life	2,000 to 5,000 readings, for sealed lead acid power supply, depending upon ambient temperature and rate of readings
Weights and Dimensions	
Instrument Console Only	2.8 kg, 238 x 150 x 250mm
NiCad or Alkaline Battery Cartridge	1.2 kg, 235 x 105 x 90mm
NiCad or Alkaline Battery Belt	1.2 kg, 540 x 100 x 40mm
Lead-Acid Battery Cartridge	1.8 kg, 235 x 105 x 90mm
Lead-Acid Battery Belt	1.8 kg, 540 x 100 x 40mm
Sensor	1.2 kg, 56mm diameter x 200mm
Gradient Sensor (0.5 m separation - standard)	2.1 kg, 56mm diameter x 790mm
Gradient Sensor (1.0 m separation - optional)	2.2 kg, 56mm diameter x 1300mm
Standard System Complement	Instrument console; sensor; 3-meter cable, aluminum sectional sensor staff, power supply, harness assembly, operations manual.
Base Station Option	Standard system plus 30 meter cable
Gradiometer Option	Standard system plus 0.5 meter sensor

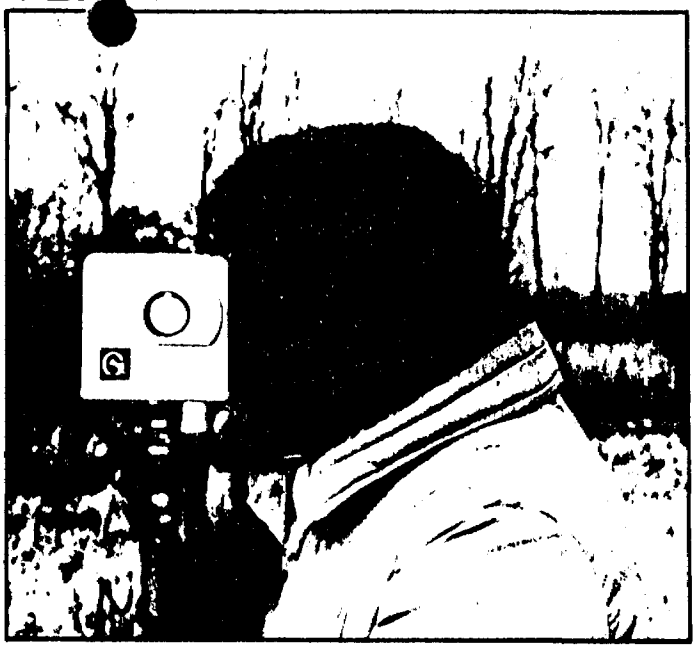
E D A Instruments Inc.
4 Thorncliffe Park Drive
Toronto, Ontario
Canada M4H 1H1
Telex: 06 23222 EDA TOR
Cable: Instruments Toronto
(416) 425 7800

In U.S.A.
E D A Instruments Inc.
5151 Ward Road
Wheat Ridge, Colorado
U.S.A. 80033
(303) 422 9112

Printed in Canada

VLF (PLANE WAVE) EM INSTRUMENTS

VLF EM



EM16

One of the most popular and widely used electromagnetic instruments, the EM16 VLF receiver makes the ideal reconnaissance EM. This can be attributed to its field reliability, operational simplicity, compactness and mutual compatibility with other reconnaissance instruments such as portable magnetometers and radiometric detectors.

The VLF method of EM surveying, pioneered by Geonics, has proven to be a simple economical means of mapping geological structure and fault tracing. The applications are many and varied, ranging from direct detection of massive sulphide conductors to the indirect detection of precious metals and radioactive deposits.

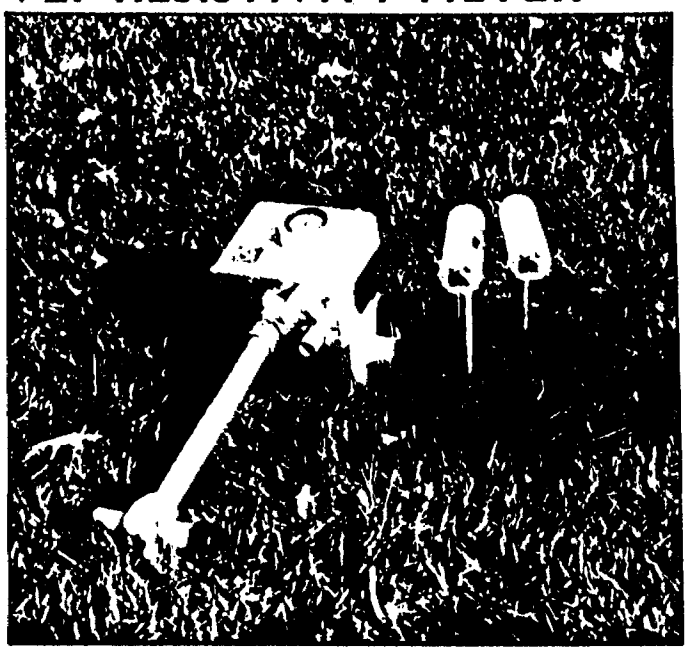
FEATURES

- The EM16 is the only VLF instrument that measures the quad phase as well as the in-phase secondary field. This has the advantage of providing an additional piece of data for a more comprehensive interpretation and also allows a more accurate determination of the tilt angle.
- The secondary fields are measured as a ratio to the primary field making the measurement independent of absolute field strength.
- The EM16 is the only VLF receiver that can be adapted to measure VLF resistivity.

Specifications

MEASURED QUANTITY	In-phase and quad-phase components of vertical magnetic field as a percentage of horizontal primary field. (i.e. tangent of the tilt angle and ellipticity)
SENSITIVITY	In-phase : ±150% Quad-phase : ± 40%
RESOLUTION	±1%
OUTPUT	Nulling by audio tone. In-phase indication from mechanical inclinometer and quad-phase from a graduated dial.
OPERATING FREQUENCY	15-25 kHz VLF Radio Band. Station selection done by means of plug-in units.
OPERATOR CONTROLS	On/Off switch, battery test push button, station selector switch, audio volume control, quadrature dial, inclinometer.
POWER SUPPLY	6 disposable 'AA' cells
DIMENSIONS	42 x 14 x 9 cm
WEIGHT	Instrument: 1.6 kg Shipping : 5.5 kg

VLF RESISTIVITY METER



EM16/16R

The EM16R is a simple, button on attachment to the EM16 converting it to a direct reading terrain resistivity meter. The EM16R interfaces a pair of potential electrodes to the EM16 enabling the measurement of the ratio of, and the phase angle between, the horizontal electric and magnetic fields of the plane wave propagated by distant VLF radio transmitters.

The EM16R is direct reading in ohm-meters of apparent ground resistivity. If the phase angle is 45°, the resistivity reading is the true value and the earth is uniform to the depth of exploration (i.e. a skin depth). Any departure from 45° of phase indicates a layered earth. Two layer interpretation curves are supplied with each instrument to permit an interpretation based on a two layer earth model.

This highly portable resistivity meter makes an ideal tool for quick geological mapping and has been used successfully for a variety of applications.

- Detection of massive and disseminated sulphide deposits
- Overburden conductivity and thickness measurements
- Permafrost mapping
- Detection and delineation of industrial mineral deposits
- Aquifer mapping

Specifications EM16R ATTACHMENT

MEASURED QUANTITY	● Apparent Resistivity of the ground in ohm-meters ● Phase angle between E_x and H_y in degrees
RESISTIVITY RANGES	● 10 — 300 onm-meters ● 100 — 3000 ohm-meters ● 1000 — 30000 ohm-meters
PHASE RANGE	0-90 degrees
RESOLUTION	● Resistivity : ±2% full scale ● Phase : ±0.5°
OUTPUT	Null by audio tone. Resistivity and phase angle read from graduated dials.
OPERATING FREQUENCY	15-25 kHz VLF Radio Band. Station selection by means of rotary switch.
INTERPROBE SPACING	10 meters
PROBE INPUT IMPEDANCE	100 MΩ in parallel with 0.5 picofarads
DIMENSIONS	19 x 11.5 x 10 cm. (attached to side of EM16)
WEIGHT	1.5 kg (including probes and cable)

Ministry of Northern Affairs and Mines
Ontario

Report of Work
(Geophysical, Geological, Geochemical and Expenditures)

W.R

W8606-319

42B01NE8571 2.9684 SEWELL

900

Mining Act

— Do not use shaded areas below.

Type of Survey(s)	Township or Area
Linecutting, VLF-EM, Magnetomer	Sewell - Reeves

Claim Holder(s)	Prospector's Licence No.
Goldrock Resources Inc. (Glen Auden Resources Limited T-1915)	T-4715

Address: P.O. Box 1637, Timmins, Ontario P4N 7W8

Survey Company	Date of Survey (from & to)	Total Miles of line Cut
R.S. Middleton Exploration Services Inc.	28 09 86 (Day Mo. Yr.) — 05 10 86 (Day Mo. Yr.)	34km.

Name and Address of Author (of Geo-Technical report)
G. Hodges P.O. Box 1637 Timmins, Ontario P4N 7W8

Credits Requested per Each Claim in Columns at right

Special Provisions		Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	Geophysical - Electromagnetic	40
	Geophysical - Magnetometer	20
For each additional survey: using the same grid: Enter 20 days (for each)	Geophysical - Radiometric	
	Geophysical - Other	
	Geological	
	Geochemical	

Man Days		Days per Claim
Complete reverse side and enter total(s) here	Geophysical - Electromagnetic	
	Geophysical - Magnetometer	
	Geophysical - Radiometric	
	Geophysical - Other	
	Geological	
	Geochemical	

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OCT 23 1986
MINING LANDS SECTION

Airborne Credits		Days per Claim
Note: Special provisions credits do not apply to Airborne Surveys.	Electromagnetic	
	Magnetometer	
	Radiometric	

Mining Claims Traversed (List in numerical sequence)

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.
P	848909	60
	848910	60
	848911	60
	848912	60
	848913	60
	848914	60
	848915	60
	755310	60
	755311	60
	755312	60
	755313	60
	755314	60
	755315	60
	755316	60
	755317	60
	755318	60
	724554	60
	932074	60
	932075	60
	932076	60

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.

RECORDED
OCT 10 1986

PORCUPINE MINING DIVISION
RECEIVED
OCT 10 1986

Total number of mining claims covered by this report of work: 20

Expenditures (excludes power stripping)

Type of Work Performed

Performed on Claim(s)

Calculation of Expenditure Days Credits

Total Expenditures: $ ÷ 15 = Total Days Credits

Instructions
Total Days Credits may be apportioned at the claim holder's choice. Enter number of days credits per claim selected in columns at right.

For Office Use Only

Total Days Cr. Recorded	Date Recorded	Mining Recorder
1200	Oct. 10/86	
	Date Approved as Recorded: 87.3.24	Branch Director

Date	Recorded Holder or Agent (Signature)
Oct.6/86	

Certification Verifying Report of Work

I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed same during and/or after its completion and the annexed report is true.

Name and Postal Address of Person Certifying
R.J. Meikle
P.O. Box 1637, Timmins, Ontario P4N 7 w8

Date Certified	Certified by (Signature)

REFERENCES

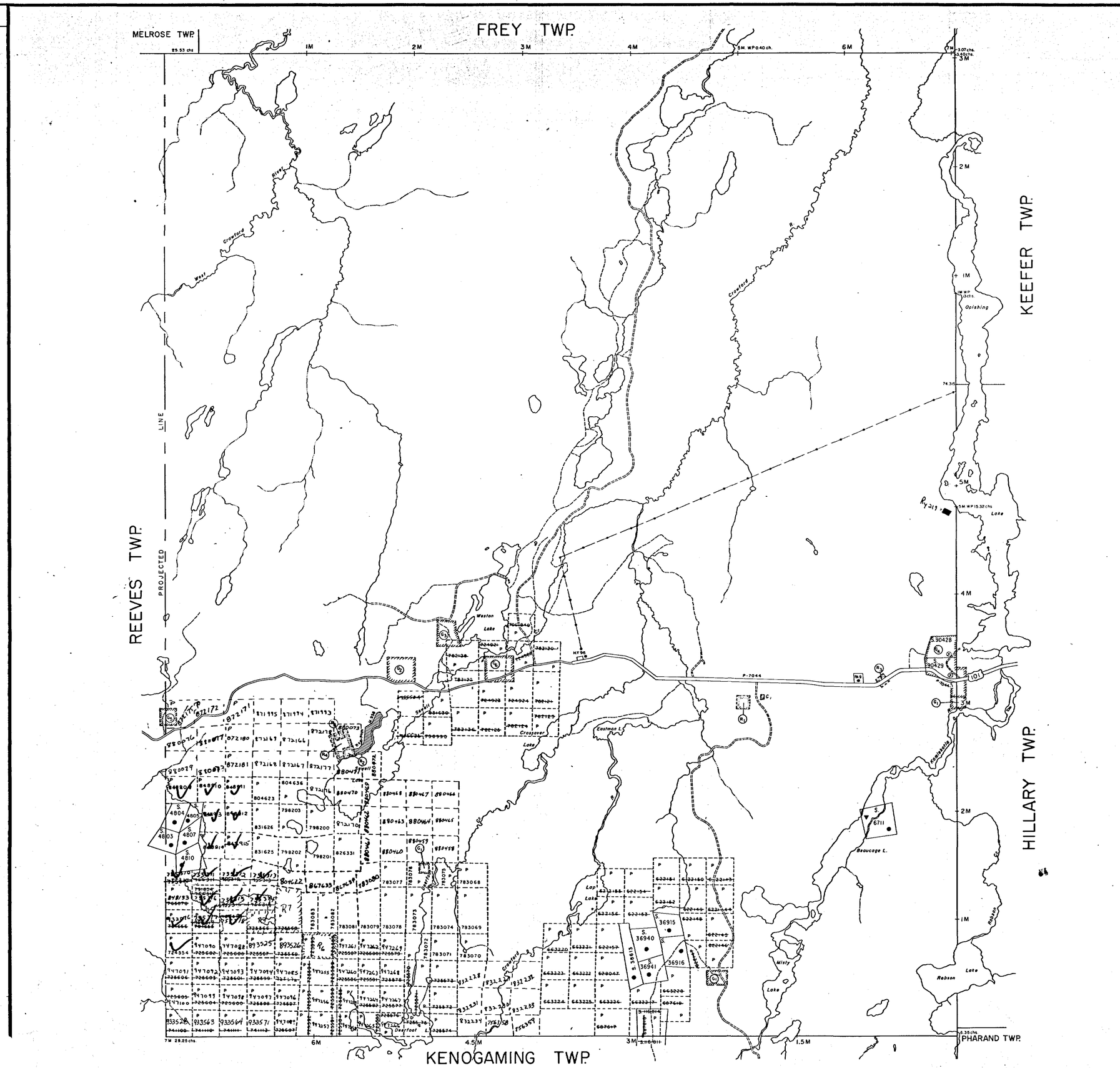
AREAS WITHDRAWN FROM DISPOSITION

M.R.O. – MINING RIGHTS ONLY
S.R.O. – SURFACE RIGHTS ONLY
M.+S. – MINING AND SURFACE RIGHTS

	Description	Order No.	Date	Disposition	File
(R1)	SEC 43/70	W.30/77	11/3/77	S.R.O.	135748
(R2)	SEC. 43/70	W.19/78	10/4/78	S.R.O.+M.R.O.	188543
(R3)	SEC. 43/70	W 10/78	14/11/78	S.R.O.	135748
(R4)	DUMP ATTENUATION ZONE				
(R5)	SEC 36/80	W. 46/83	14/8/83	M. + S.	
(R6)	NOT OPEN FOR STAKING (AWAITING INSPECTION) #71/86				
(R7)	"Filed Only" (D-26/86)				

SAND AND GRAVEL

(G1)	GRAVEL	FILE	135748
(G2)	M.T.C.	PIT	1577
(G3)	M.T.C	PIT	3H-1 FILE 135748
(G4)	M.T.C	PIT	1576
(G5)	M.T.C.	PIT	3H-2 FILE 184702
(G6)	M.T.C	PIT	1243



LEGEND

- HIGHWAY AND ROUTE No.
- OTHER ROADS
- TRAILS
- SURVEYED LINES:
  - TOWNSHIPS, BASE LINES, ETC.
  - LOTS, MINING CLAIMS, PARCELS, ETC.
- UNSURVEYED LINES:
  - LOT LINES
  - PARCEL BOUNDARY
  - MINING CLAIMS ETC.
- RAILWAY AND RIGHT OF WAY
- UTILITY LINES
- NON-PERENNIAL STREAM
- FLOODING OR FLOODING RIGHTS
- SUBDIVISION OR COMPOSITE PLAN
- RESERVATIONS
- ORIGINAL SHORELINE
- MARSH OR MUSKEG
- MINES
- TRAVERSE MONUMENT

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
PATENT, SURFACE & MINING RIGHTS	●
" , SURFACE RIGHTS ONLY	◓
" , MINING RIGHTS ONLY	◒
LEASE, SURFACE & MINING RIGHTS	■
" , SURFACE RIGHTS ONLY	◨
" , MINING RIGHTS ONLY	◪
LICENCE OF OCCUPATION	▼
ORDER-IN-COUNCIL	OC
RESERVATION	(R)
CANCELLED	(X)
SAND & GRAVEL	(G)

NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY 6, 1913, VESTED IN ORIGINAL PATENTEE BY THE PUBLIC LANDS ACT, R.S.O. 1970, CHAP. 380, SEC. 63, SUBSEC 1.

SCALE: 1 INCH = 40 CHAINS

FEET 0 1000 2000 4000 6000 8000
METRES 0 200 1000 (1 KM) 2000 (2 KM)

TOWNSHIP

SEWELL

M.N.R. ADMINISTRATIVE DISTRICT

TIMMINS

MINING DIVISION

PORCUPINE

LAND TITLES / REGISTRY DIVISION

SUDBURY

Ministry of Natural Resources — Land Management Branch — Ontario

Date	Number
MARCH, 1985	G-3247

Checked L.P.
Date 6/85

MELROSE TP. M.861

MUSKEGO TP. M.881

SEWELL TP. M.1102

PENHORWOOD TP. M.1055

THE TOWNSHIP OF

REEVES

DISTRICT OF SUDBURY

PORCUPINE MINING DIVISION

SCALE: 1-INCH 40 CHAINS

LEGEND

PATENTED LAND	● or (P)
CROWN LAND SALE	C.S.
LEASES	(L)
LOCATED LAND	Loc.
LICENSE OF OCCUPATION	L.O.
MINING RIGHTS ONLY	M.R.O.
SURFACE RIGHTS ONLY	S.R.O.
ROADS	
IMPROVED ROADS	
KING'S HIGHWAYS	
RAILWAYS	
POWER LINES	
MARSH OR MUSKEG	
MINES	
CANCELLED	C
PATENTED S.R.O.	

NOTES

400' surface rights reservation along the shores of all lakes and rivers

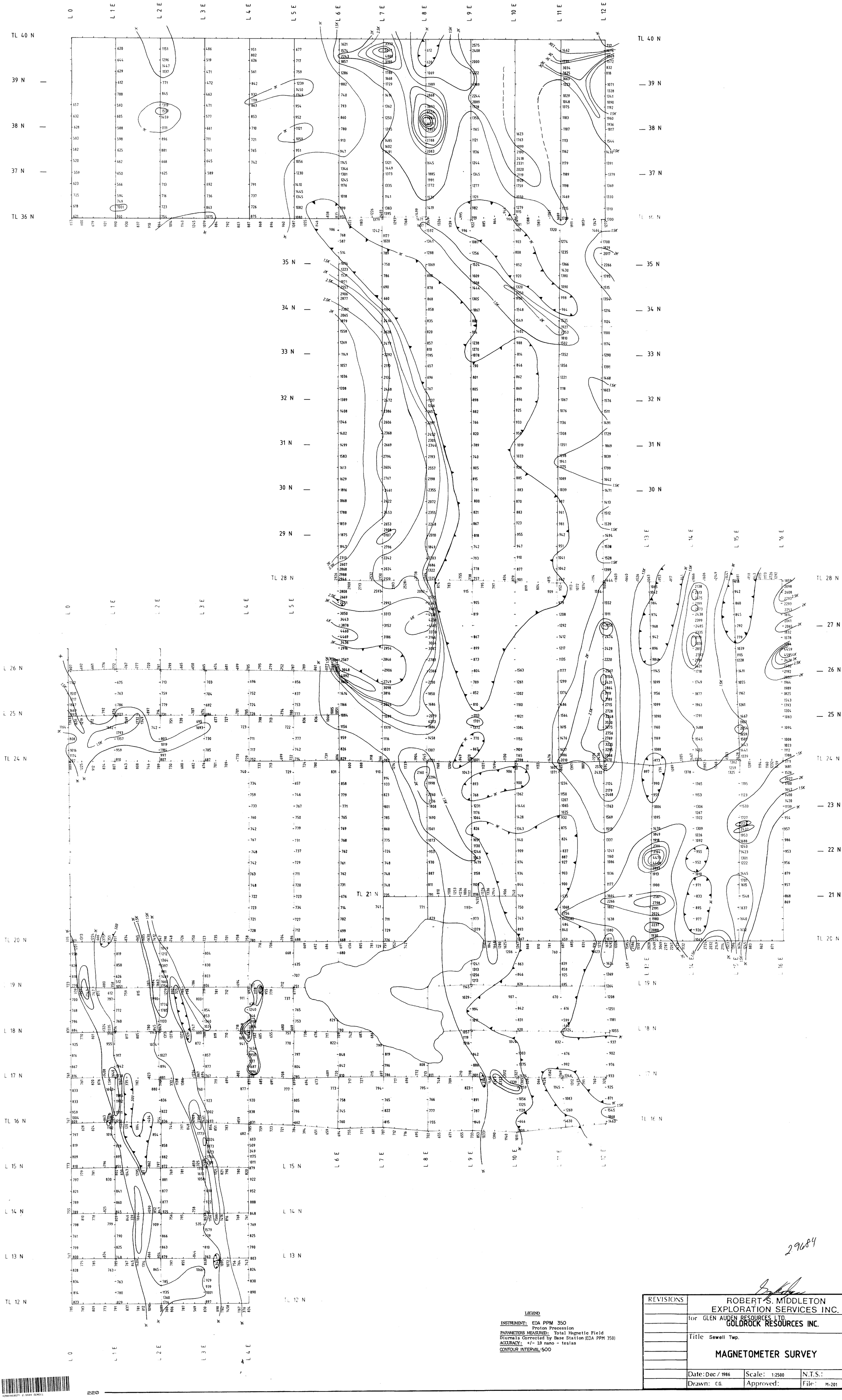
Areas withdrawn from staking under Section 43 of the Mining Act (R.S.O. 1970)

Order No.	File	Date	Disposition

Rec. Feb 11/80

PLAN NO. M.1074

ONTARIO
MINISTRY OF NATURAL RESOURCES
SURVEYS AND MAPPING BRANCH

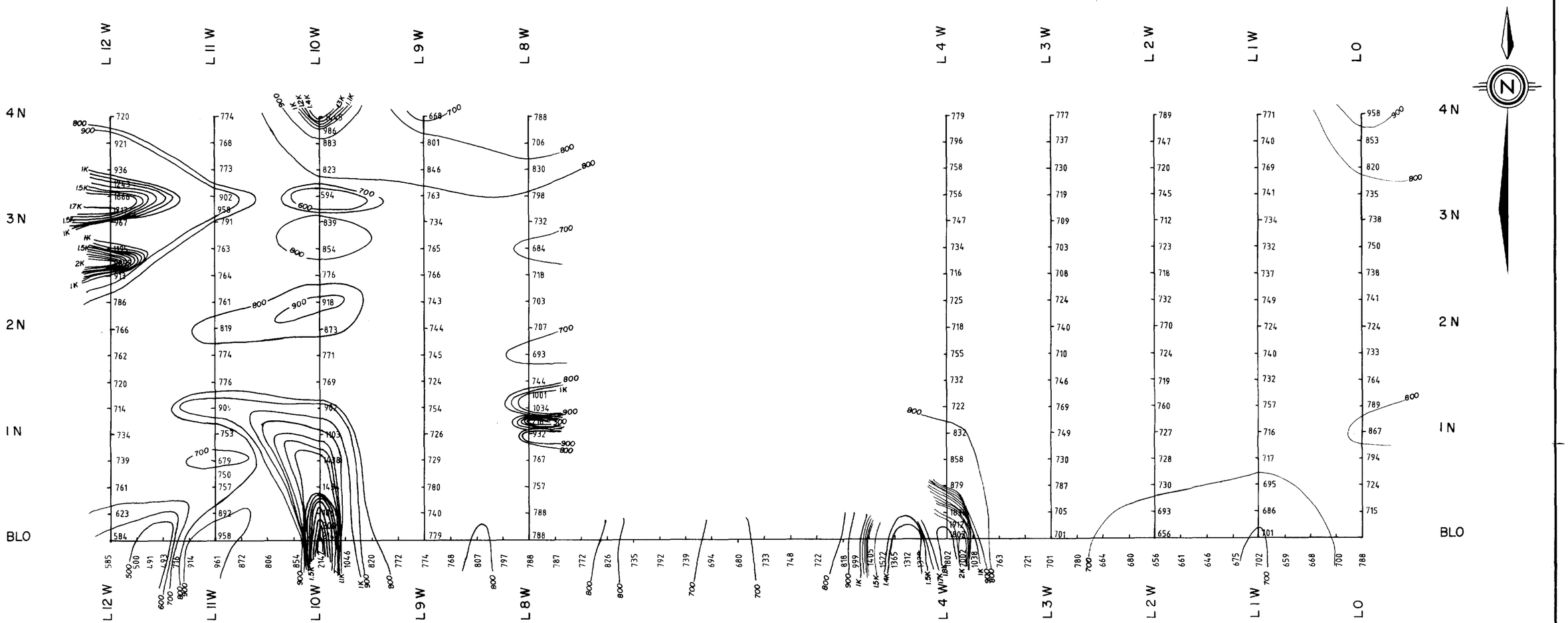


LEGEND

INSTRUMENT: EDA PPM 350
Proton Precession
PARAMETERS MEASURED: Total Magnetic Field
Diurnals Corrected by Base Station (EDA PPM 350)
ACCURACY: +/- 10 nano - teslas
CONTOUR INTERVAL: 500

29684

REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.
	for GLEN AUDEN RESOURCES LTD. GOLDROCK RESOURCES INC.
	Title Sewell Twp.
	MAGNETOMETER SURVEY
	Date: Dec / 1986 | Scale: 1:2500 | N.T.S.:
	Drawn: C.G. | Approved: | File: M-201



LEGEND

INSTRUMENT: EDA PPM 350
Proton Precession
PARAMETERS MEASURED: Total Magnetic Field
Diurnals Corrected by Base Station (EDA PPM 350)
ACCURACY: +/- 10 nano - teslas
CONTOUR INTERVAL: 100

REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.		
	for GLEN AUDEN RESOURCES LTD. GOLDROCK RESOURCES INC.		
	Title Sewell Twp		
	MAGNETOMETER SURVEY		
	Date: Dec / 1986	Scale: 1:2500	N.T.S.:
	Drawn: C.G.	Approved:	File: M-201

L 0 | L 1 E | L 2 E | L 3 E | L 4 E | L 5 E | L 6 E | L 7 E | L 8 E | L 9 E | L 10 E | L 11 E | L 12 E

TL 40 N — 39 N — 38 N — 37 N — TL 36 N — 35 N — 34 N — 33 N — 32 N — 31 N — 30 N — 29 N — TL 28 N — 27 N — L 26 N — L 25 N — TL 24 N — 23 N — 22 N — TL 20 N — L 19 N — L 18 N — L 17 N — TL 16 N — L 15 N — L 14 N — L 13 N — TL 12 N

848909 848910 848911 848913 848912 848914 848915 755310 755311 755312 755313 755314 755315 755316 755317 755318 832070 724554 950272

Beaver Pond

Beaver pond

Beaver pond

L 13 E | L 14 E | L 15 E | L 16 E

TL 28 N — 27 N — 26 N — 25 N — 23 N — 22 N — 21 N — TL 20 N — L 19 N — L 18 N — L 17 N — TL 16 N — L 15 N — L 14 N — L 13 N — TL 12 N

Reading Direction

Direction to Naa 96°

In-phase Dip Angles (%)

Quadrature (%)

True Cross-Over

LEGEND

INSTRUMENT: Geonics Em-16

PARAMETERS MEASURED: In phase dip angles (%)

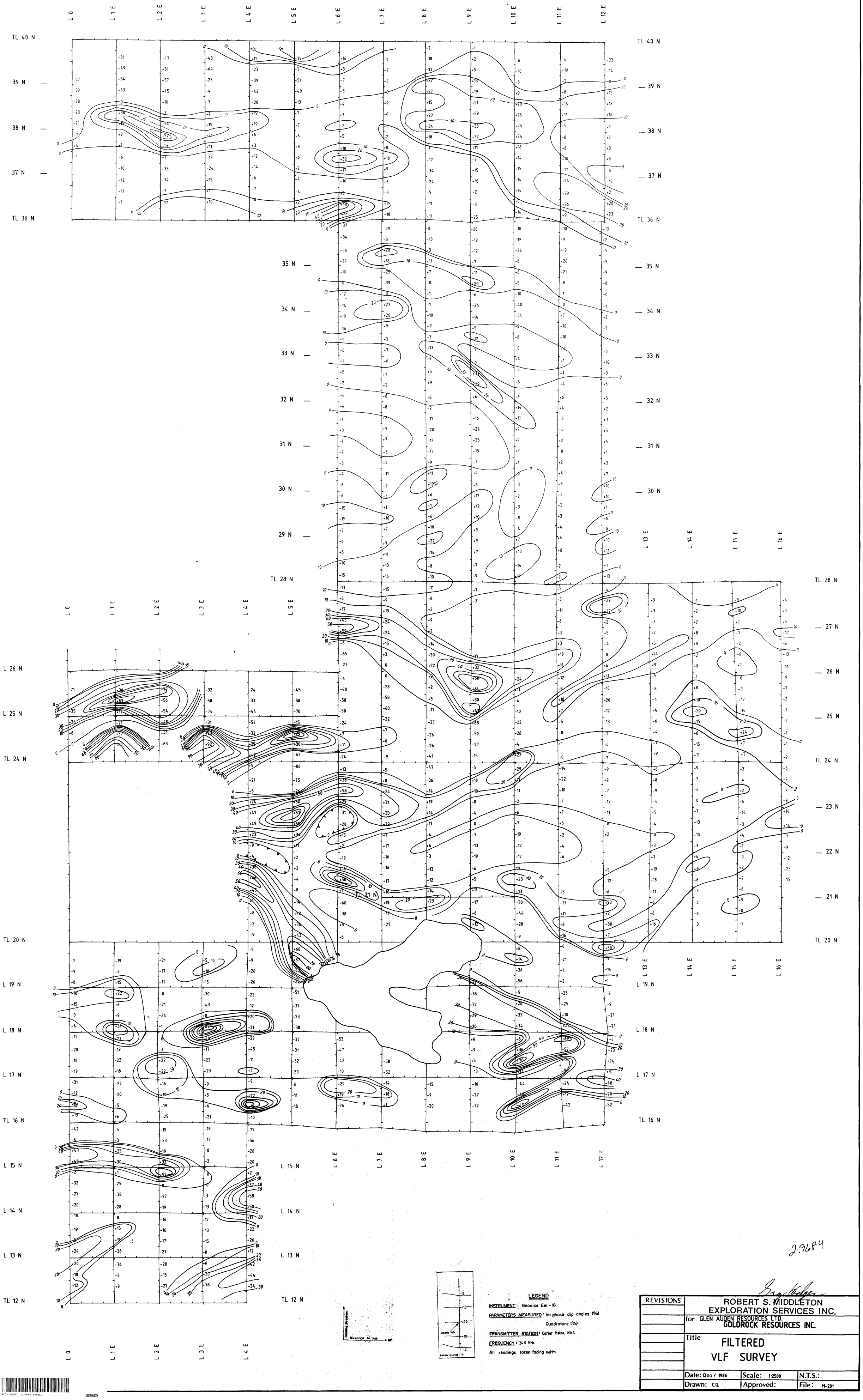
Quadrature (%)

TRANSMITTER STATION: Cutler Maine, NAA

FREQUENCY: 24.0 KHz

All readings taken facing north

REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.
	for GLEN AUDEN RESOURCES LTD. GOLDROCK RESOURCES INC.
	Title: VLF SURVEY 29684
	Date: Dec / 1986 | Scale: 1:2500 | N.T.S.:
	Drawn: C.G. | Approved: | File: M-201



LEGEND

INSTRUMENT : Geosics Em - 16

PARAMETERS MEASURED : In-phase dip angles (%)
Quadrature (%)

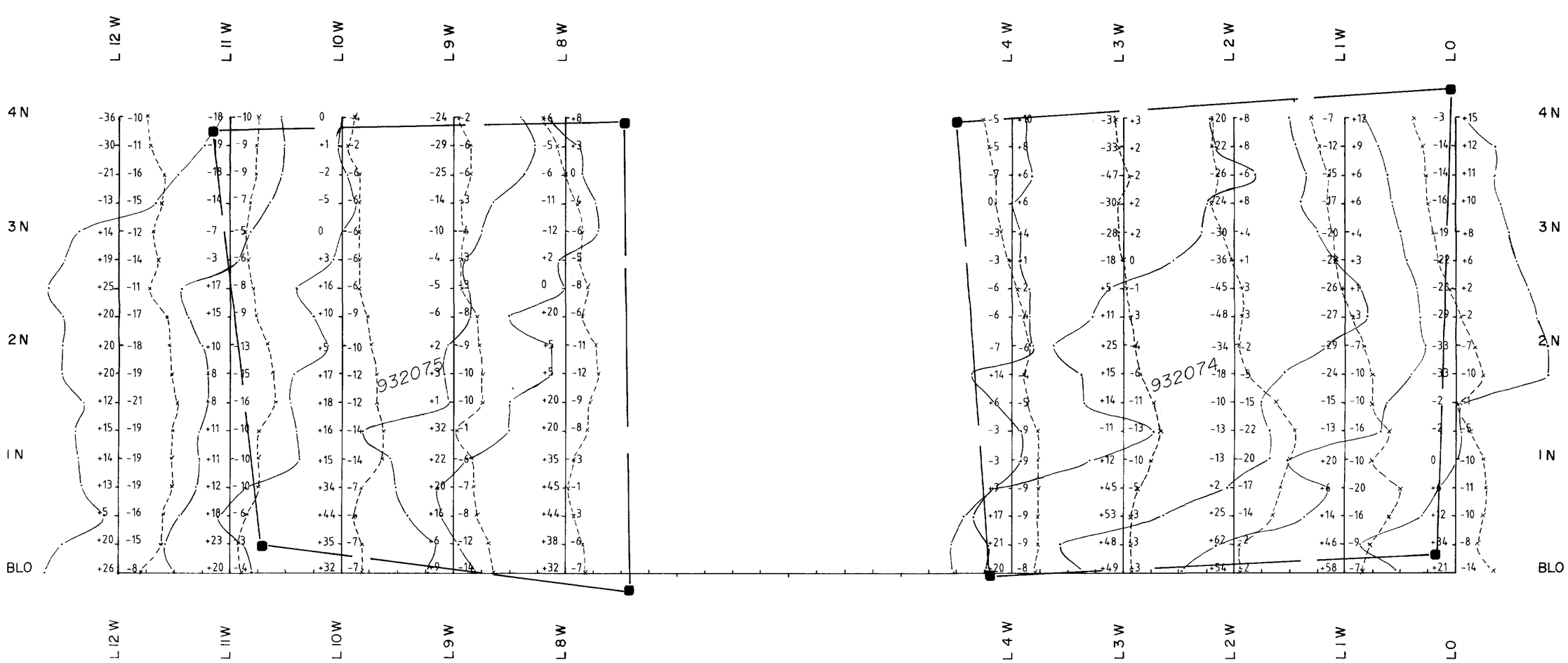
TRANSMITTER STATION : Cutler Maine, NAA

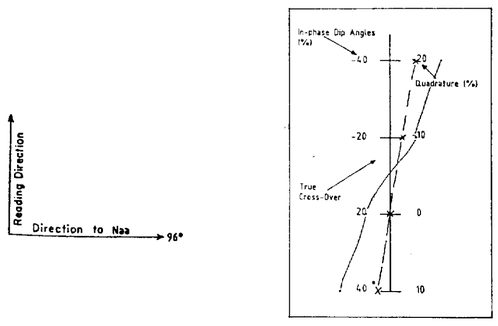
FREQUENCY : 24.0 Khz

All readings taken facing north

2.9684

REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.		
	for GLEN AUDEN RESOURCES LTD. GOLDROCK RESOURCES INC.		
	Title FILTERED VLF SURVEY		
	Date: Dec / 1986	Scale: 1:2500	N.T.S.:
	Drawn: C.G.	Approved:	File: M-201





LEGEND

INSTRUMENT: Geonics Em-16

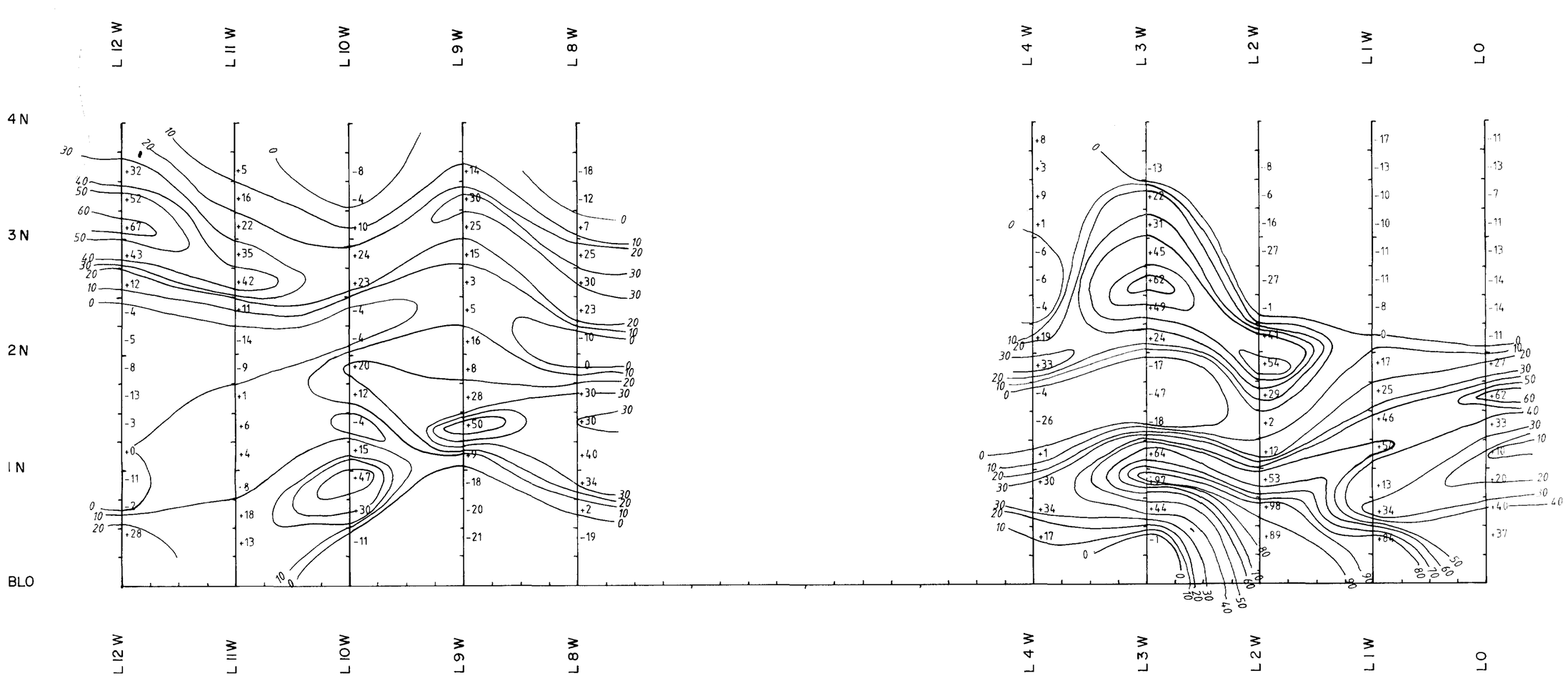
PARAMETERS MEASURED: In phase dip angles (%)
Quadrature (%)

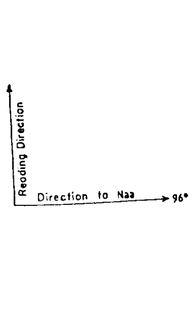
TRANSMITTER STATION: Cutler Maine, NAA

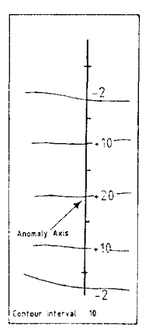
FREQUENCY: 24.0 KHz

All readings taken facing north

REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.		
	for GLEN AUDEN RESOURCES LTD. GOLDROCK RESOURCES INC.		
	Title Sewell Twp		
	VLF SURVEY 2.9684		
	Date: Dec / 1986	Scale: 1:2500	N.T.S.:
	Drawn: C.G.	Approved:	File: M-201







LEGEND

INSTRUMENT : Geonics Em - 16

PARAMETERS MEASURED : In phase dip angles (%)

Quadrature (%)

TRANSMITTER STATION : Cutler Maine, NAA

FREQUENCY : 24.0 KHz

All readings taken facing north

REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.		
	for GLEN AUDEN RESOURCES LTD. GOLDROCK RESOURCES INC.		
	Title Sewell Twp FILTERED VLF SURVEY		
	Date: Dec / 1986	Scale: 1:2500	N.T.S.:
	Drawn: C.G.	Approved:	File: M - 201